

## NORTH PACIFIC OCEAN

By WILLIS EDWIN HURD

So far in 1925 there have been two stormy months over the upper reaches of the North Pacific Ocean. The first was February, with several days during which whole gales to hurricane winds occurred. The second was October with 13 days on which equally violent winds are known to have been experienced. This is extraordinary for so early a period in the stormy season.

A fairly strong cyclonic development lay over the central Aleutians at the beginning of the month. It had intensified considerably by the 3d, and on the 3d, 4th, and 5th gales of force 10 to 11 occurred from the fortieth parallel northward to the archipelago. Storm winds also prevailed east of Hondo on the 3d, and gales of force 8 to 10 over eastern and western Japanese waters on the 2d to 4th. By the 9th the Low over the Aleutians had lost practically all its energy, and not until the 12th were there signs of its renewed activity.

At this time low pressure rapidly overspread a great area in middle and northern latitudes, and by the 15th was existent from 155° E. to 130° W., with barometer readings almost down to 28 inches near 49° N., 160° W., and gales of force 11 occurring near this center and to the eastward as far as the one hundred and forty-fifth meridian. On the 17th the main force of the storm, the center of which was now over the Alaska Peninsula, lay in the eastern semicircle, where a SE. hurricane was in progress at and near 49° 35' N., 135° 50' W. By the 20th this Low had ceased to be of importance, but on the 21st another energetic cyclone was forming rapidly near 40° N., 165° W. Two days later a Low appeared near 45° N., 170° E. The two joined on the 27th, and whole gales to storm winds again swept the central longitudes of the northern steamer routes. This disturbance had abated by the close of the month.

The number of days in this region with pressures lower than 29 inches was at least 12. The minimum reading reported was 27.93 inches, made on board the American steamer *President Jackson*, in 49° 10' N., 178° 22' W., on the 27th, maximum wind, 10 west.

For the first time in many months the North Pacific HIGH was greatly disturbed by cyclonic influences, and during much of the second decade of October it was little more than an anticyclonic ridge off the coast of the United States. During the other two decades it was fairly well developed, but was not at its full normal condition until the last four days of the month, when it covered middle latitudes east of the one hundred and eightieth meridian.

The following table shows the atmospheric pressures for several island and coast stations. It will be observed from the departures given that the Aleutian Low was considerably more active than usual over the region to the southwest of Alaska, but less active over that part of the Gulf of Alaska east of Kodiak:

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
Dutch Harbor <sup>1</sup> 2	29.34	-0.35	30.26	22d	28.58	27th
Saint Paul <sup>1</sup>	29.50	-0.16	30.56	23d	28.78	27th
Kodiak <sup>1</sup>	29.59	0.00	30.16	23d	28.76	15th
Midway Island <sup>1</sup>	30.02	-0.03	30.12	10th	29.86	24th
Honolulu <sup>1</sup>	29.97	-0.03	30.08	16th	29.81	21st
Juneau <sup>1</sup>	30.00	+0.13	30.32	25th	29.47	19th
Tatoosh Island <sup>1</sup> 4	30.08	+0.05	30.40	19th	29.61	5th
San Francisco <sup>1</sup> 4	29.96	-0.04	30.15	27th	29.67	5th
San Diego <sup>1</sup> 4	29.94	+0.01	30.08	27th	29.60	5th

<sup>1</sup> P. m. observations only.  
<sup>2</sup> 23 days.

<sup>3</sup> A. m. and p. m. observations.  
<sup>4</sup> Corrected to 24-hour mean.

East winds continued to prevail at Honolulu, but there was a fair sprinkling of kona winds as the northern Lows dipped southward. The maximum velocity was 26 miles an hour from the east, on the 6th. Rainfall was above the normal for the first time in any month this year. There was a total of 2.47 inches, giving a departure of 0.92 inch.

The only gales reported from the Far East that might be of tropical origin were some of moderate force that occurred south of Japan on the 13th. There were some storm conditions, however, as may be noted in the accompanying typhoon report by the Rev. José Coronas, S. J., of the Manila Observatory.

In American tropical waters moderately severe gales were experienced on the 4th and 5th by vessels to the westward of Lower California. The American steamer *Gulfqueen* encountered a south gale, force 10, in 27° 30' N., 115° 30' W., barometer 29.50 inches, early on the 5th. On the 12th this steamer, proceeding southward, fell in with rough weather near 20° N., 105° W. The British steamer *Canadian Seigneur* experienced similar weather near by. No barometric disturbance was noted by either vessel on this date. The winds were SSE. to E., highest force 8.

On the 22d to 25th occurred what was perhaps the most violent disturbance of the month in these waters. Mr. E. Vasquez, observer and chief officer of the Mexican steamer *Sinaloa*, has drawn for us a tentative track of this storm, which he finds central in 13° 30' N., 96° W., at 5 p. m. of the 22d, having originated not far from that position. He shows the cyclone to have moved WNW. until the 24th, when, at 6 a. m., it was central in 16° 20' N., 104° 30' W. During that day its course must have curved rapidly through NW. into N. It crossed Cape Corrientes during the night and passed inland. Press reports for the 25th speak of a "terrific hurricane lashing the coast towns," damaging many houses and leveling trees on the mountain slopes. The American steamer *Corinto* mentions encountering a SSE. gale, force 8, pressure 29.90, in 19° 04' N., 104° 20' W., on this date.

Fog, as in October of last year, was comparatively infrequent over the northern part of the ocean, although over the southern part of the Gulf of Alaska it was reported on six days, and on the Washington and Oregon coasts it occurred on 30 per cent to 40 per cent of the days. It was reported on one day south of the thirtieth parallel, that being the 18th, in 28° N., 145° W.

#### ONLY ONE SHALLOW DEPRESSION AND ONE SMALL, BUT INTENSE, TYPHOON OVER THE PHILIPPINES IN OCTOBER, 1925

By REV. JOSÉ CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

On the 5th a shallow depression appeared to the east of Mindanao in about 130° longitude E. and 8° latitude N. It moved northwestward across the Visayas and Mindoro on the 6th and 7th; and on the 8th it recurved northeastward about 200 miles to the west of Luzon. On the 9th it moved again into the Pacific near the northern coast of Luzon, moving eastward.

After the preceding depression a low-pressure area remained for several days over the China Sea near Luzon, and even over Luzon, until on the 13th a small but severe typhoon appeared over the China Sea northwest of Palawan Island between 117° and 118° longitude E., 11° and 12° latitude N. It moved ENE. and was felt as a vio-

lent storm in Culion on the 15th and San Jose Mindoro during the night of the 15th and 16th. The steamer *Perlak* was in the center of this typhoon only about 9 miles to the W. of south Mindoro, the barometer having fallen at midnight of the 15th to 28.14 inches (714.75 mm.). We have no observations from midnight to 8 a. m. of the 16th, as the barometer with which the observations were made was lost in the storm. But as it was about or not far from 1 a. m. when the vortical calm was observed, we suppose that the barometric minimum was still lower. During the calm the stars could be seen and many birds fell on the ship.

The small typhoon lost much of its energy on striking Mindoro and filled up within the Philippines on the 17th between 13° and 14° latitude N. and near 123° longitude E.

Besides the Philippine depression and typhoon mentioned another typhoon was shown by our weather maps at 6 a. m. of October 1 to the SE. of Tokio in about

141° 30' longitude E., 33° 35' latitude N., moving ENE. The steamer *President Adams* was near the center with a barometric minimum of 29.03 inches (737.35 mm.) at 5 a. m. of October 1. This was the same typhoon mentioned in our article for last month as situated on the 25th of September between Guam and the Philippines moving WNW. On the 26th it took a northerly direction until it recurved to ENE. on the 30th. The steamer *Radnor* met this typhoon to the east of the Loochoos with a barometric minimum of 29.27 inches (743.44 mm.) at 6 a. m. of September 28.

The approximate positions of the center at 6 a. m. of September 24 to 30 were as follows:

24th, 6 a. m., 142° 10' long. E., 11° 00' lat. N.  
 25th, 6 a. m., 137° 00' long. E., 13° 40' lat. N.  
 26th, 6 a. m., 132° 15' long. E., 15° 45' lat. N.  
 27th, 6 a. m., 130° 50' long. E., 19° 15' lat. N.  
 28th, 6 a. m., 132° 00' long. E., 23° 10' lat. N.  
 29th, 6 a. m., 132° 20' long. E., 27° 50' lat. N.  
 30th, 6 a. m., 133° 40' long. E., 31° 20' lat. N.

## DETAILS OF THE WEATHER IN THE UNITED STATES

### GENERAL CONDITIONS

The current month was the first of 1925 having a temperature considerably below the normal. Three anticyclones, each of more than the usual intensity for October, brought unseasonably low temperature to the upper Missouri Valley and the northern Plains States. These anticyclones were well distributed throughout the month, one each occurring in the first, second, and third decades, respectively. Concomitant features were an increase in the number and intensity of cyclonic storms and fairly abundant rainfall in the Rocky Mountain and Plateau regions, the Gulf and southeastern States. The usual details follow.—A. J. H.

### CYCLONES AND ANTICYCLONES

By W. P. DAY

The number of low-pressure areas during October was decidedly above the normal. The paths of 23 of these have been plotted on Chart II, a number not often exceeded during a winter month. The storm areas at times followed each other in close succession with but slight intervals of rising pressure between.

High-pressure areas were rather less than the normal in number; 11 which could be definitely traced were plotted on Chart I. Of the three important HIGHS, two were well shown at Fort Simpson, Canada, before reaching the United States. The one which appeared in the Northwest on the 18th, however, was not definitely heralded at Fort Simpson.

### FREE-AIR SUMMARY

By L. T. SAMUELS

The large negative temperature departures occurring at certain stations present the most outstanding feature in the average free-air conditions for the month. It is evident from Table 1 that these departures are greatest and of practically equal magnitude at the three northernmost stations, somewhat smaller at Broken Arrow and least at Groesbeck and Due West, the southern and easternmost stations, being practically negligible at the latter place. At the northern stations they remain exceedingly large to the upper limit of the observations which at Ellendale was 5,000 m., while at Broken Arrow and Groesbeck the usual decrease with altitude occurs. The constancy of the abnormally low temperatures

throughout the month at the northern stations is well brought out in the following table by the high percentages of days (i. e., of those on which kite flights were made) having temperatures below normal.

Station	Surface	Meters above sea level				
		1,000	2,000	3,000	4,000	5,000
Ellendale.....	90	97	97	84	83	100
Drexel.....	96	92	81	69	75	-----
Royal Center.....	90	88	89	83	-----	-----
Broken Arrow.....	67	63	50	50	50	-----
Groesbeck.....	52	58	17	33	33	-----
Due West.....	46	44	33	33	-----	-----

Another feature was the abnormally high winds which prevailed at various altitudes in the latter half of the month during which period two pronounced anticyclones passed over the greater portion of the country. The strong winds were not confined to the regions above these HIGHS, however, but prevailed in general over the intervening LOWS as well. Some of the highest velocities recorded during this period are shown below.

Station	Date	Velocity	Direction	Altitude
		M. p. s.		M.
Broken Arrow.....	19	40		6,000
Denver.....	25	36	WNW.	4,600
Drexel.....	28	41	WNW.	5,800
Due West.....	27	36	WSW.	6,000
Do.....	28	39	WSW.	7,000
Ellendale.....	16	40	W.	8,000
Do.....	31	39	WNW.	6,300

The pronounced anticyclone which prevailed at the end of the month was accompanied by record minimum temperatures for October for various altitudes at all aerological stations. As would be expected with such marked deficiencies in the monthly mean temperatures, the average relative humidities were above normal while the vapor pressures were mostly below.

The resultant winds for the month, in keeping with the large negative temperature departures, show unusually pronounced deviations from their normals. In table 2 it will be noted that the normal resultant at Drexel contains an appreciable south component whereas, a large north component is found for this month. At other stations the south component is considerably less pro-